

Visual Data Mining Toolbox, Phase I

Completed Technology Project (2008 - 2008)



Project Introduction

Visual Data Mining (VDM) is an Internet-based software that supports spatial and temporal analyses of multimodal NASA science data including satellite images and in-situ sensory data. It combines computer vision, multi-physics simulation and interactive visualization. VDM tools can be integrated to NASA-related systems for detecting, tracking, modeling and predicting the movement of surface objects. The proposed system will use NASA products such as MODIS as a satellite imagery data source. The system will also incorporate the in-situ data from NOAA and JPL. The development tasks include designing object detection and tracking algorithms in Java for online distributed applications, designing compact cellular automata based simulation and prediction tools, designing data fusion and 3D navigation interface that links to Google Earth. It is expected that the VDM tools can increase the utility of scientific research data, models, simulations, and visualization in practical applications, for example, real-time detection and tracking of river plume discharged to the open water, or harmful algal blooms along the coastline. It will increase the speed of image analysis process in one order of magnitude.

Primary U.S. Work Locations and Key Partners

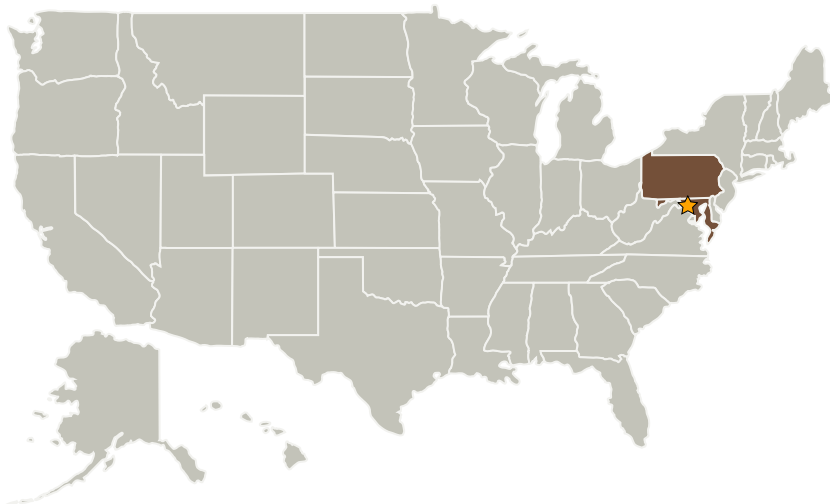
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Organizational
Responsibility**Responsible Mission
Directorate:**Space Technology Mission
Directorate (STMD)**Lead Center / Facility:**Goddard Space Flight Center
(GSFC)**Responsible Program:**Small Business Innovation
Research/Small Business Tech
Transfer

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| Organizations Performing Work | Role | Type | Location |
|------------------------------------|-------------------------|-------------|-------------------------|
| ★Goddard Space Flight Center(GSFC) | Lead Organization | NASA Center | Greenbelt, Maryland |
| Ambint | Supporting Organization | Industry | Cranberry, Pennsylvania |

Primary U.S. Work Locations

| | |
|----------|--------------|
| Maryland | Pennsylvania |
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Yang Cai

Technology Areas

Primary:

- TX02 Flight Computing and Avionics
 - └ TX02.1 Avionics Component Technologies
 - └ TX02.1.3 High Performance Processors